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| 10/822,701      | 04/13/2004  | Yukichi Takamatsu    | 396.43773X00        | 2921             |

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EXAMINER

BUEKER, RICHARD R

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1763

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|                              |                               |                                 |  |
|------------------------------|-------------------------------|---------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/822,701 | Applicant(s)<br>TAKAMATSU ET AL |  |
|                              | Examiner<br>Richard Bueker    | Art Unit<br>1763                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 8-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>Dec. 14, 2004</u> . | 6) <input type="checkbox"/> Other: _____  |

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Claims 1-4 and 8-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, lines 6 and 7, the phrase "its outlet to the vaporization chamber" lacks proper antecedent basis. In claim 1, lines 8 and 10, it is unclear if the word "thereof" refers to "said vaporization chamber" or "the coaxial nozzle". In claim 1, lines 11 and 12, the phrase "the end of the outside nozzle opening into the vaporization chamber" lacks proper antecedent basis. In claim 13, the phrases "the central nozzle being provided inside the inner tube" and "the outside nozzle being provided between the inner and outer tubes" are unclear. It is noted that the definition of "nozzle" is "a projecting spout, terminal discharging pipe, or the like, as of a hose or bellows". These phrases in claim 13 appear to be referring to the space within or between nozzles, rather than nozzles themselves. The definition of "nozzle" requires more than that.

Claims 13-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 13, the phrases "the central nozzle being provided inside the inner tube" and "the outside nozzle being provided between the inner and outer tubes" are unclear. It is noted that the definition of "nozzle" is "a projecting spout, terminal discharging pipe, or the like, as of a hose or bellows". These phrases in claim 13 appear to be referring to empty space, while the definition of

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“nozzle” requires more than that. It is unclear from applicants’ specification what these phrases are referring to, and applicants are respectfully requested to identify the portion of the specification which provides support for this added language.

Claims 1-4 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benzing (5,653,813) taken in view of Lyons (6,245,150), Selvamanickam (WO 02/0564420), Onabe (JP 11-323558) and Yoshioka (2002/0043215). Benzing’s vaporizer (see Figs. 5 and 6) is for CVD material, and includes a vaporization chamber, a CVD material feed portion, an exhaust, a heater and a “co-axial nozzle” including an outside diameter that is beveled or tapered in a direction toward an outlet end of the ejection tube. Benzing (see col. 8, lines 7-9, for example) teaches that the purpose providing a beveled surface is to prevent liquid drops from clinging to the dispersing end of the nozzle. In view of this teaching, it would have been obvious to one skilled in the art to routinely determine the degree of taper needed to prevent drops from clinging as taught by Benzing. Also, Benzing teaches (see col. 11, lines 14-16, for example) that his nozzle can operate successfully with some axial displacement between the end of his central nozzle and his outside nozzle, which includes an embodiment in which the central nozzle extends beyond the end of the outside nozzle as claimed. Furthermore, each of Lyons (see Fig. 5c, for example), Selvamanickam (see Fig. 1, for example), Onabe (see Fig. 2, for example) and Yoshioka (see Fig. 33 and paragraph 153, for example) teach that it is desirable to provide a central nozzle that supplies liquid in a manner such that it extends slightly beyond the end of an outside nozzle that supplies atomizing gas. Therefore, it would have been obvious to one skilled in the art to provide

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the central nozzle of Fig. 6 of Benzing in a manner such that it extends slightly beyond the end of the outside nozzle. Furthermore, Onabe (see paragraphs 20 and 21 of the attaches English translation) specifically teaches that the extension should be 1 mm, as claimed by applicants. In view of this teaching of Onabe, it would have been obvious to use this particular length to extend the central nozzle of Benzing beyond the end of the outside nozzle. As an alternative to the above rejection, it would have been obvious to one skilled in the art to modify the co-axial nozzles of the secondary references to provide them with a tapered outside diameter of the type taught by Benzing, for the desirable purpose of reducing clinging of drops to the end of the nozzle, as taught by Benzing. Regarding claims 9 and 10, Benzing (col. 12, lines 15-28) teaches the use of stainless steel as the material of construction for his vaporizer system. Regarding claim 11, Yoshioka (see Figs. 37-41, for example) teaches that it is desirable to provide a cooling means to cool a CVD material feed portion to prevent premature thermal reactions. for that reason it would have been obvious to provide the CVD material feed portion of Benzing's apparatus with cooling means.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Benzing (5,653,813) taken in view of Lyons (6,245,150), Selvamanickam (WO 02/0564420), Onabe (JP 11-323558) and Yoshioka (2002/0043215) for the reasons stated in the rejection above, and taken in further view of Toyoda (6,039,808). Benzing teaches that his vaporizer is intended for vaporizing Cu(hfac)(TMVS). Toyoda (see Fig. 3 and col. 4, line 66 to col. 6, line 25) teaches that it is desirable to provide a polytetrafluoroethylene (PTFE) coating on the inside of a metallic vaporizer supply line (which is a CVD material

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feed portion) when a vaporizer is supplied with Cu(hfac)(TMVS) as a CVD material for vaporization. Toyoda teaches that a PTFE coating will reduce undesirable coating formation on the interior of the Cu(hfac)(TMVS) liquid supply line. Therefore it would have been obvious to one skilled in the art to provide the liquid supply line of Benzing with a PTFE (i.e. "synthesized resin") coating on the interior of the supply line, to desirably reduce coating formation in the line as taught by Toyoda.

Applicants have argued that Table 1, on page 29 of their specification, shows that their nozzle suppresses adhesion of material. It is noted, however, that Benzing (col. 8, lines 7-9) has already taught that a tapered nozzle aids in preventing material from undesirably clinging to the end of the nozzle. For the reasons taught by Benzing, the tapered nozzle used by applicants to gather the data in Table 1 was obvious to one skilled in the art. It is noted also that the comparative examples of Table 1 use a nozzle with no taper.

Applicants' other arguments regarding the rejections contained in the previous office action have been considered, but are not convincing in view of the new grounds of rejection stated above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parvis Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Richard Bueker*

Richard Bueker  
Primary Examiner  
Art Unit 1763